REMARKS

This communication is considered fully responsive to the Office action mailed January 24, 2005. Claims 1-46 (as renumbered herein) were examined and stand rejected. Claims 7, 9, 10, 18, 38, 40-46 (as renumbered herein) are amended. No claims are cancelled. No claims are added. Reexamination and reconsideration are requested.

Claim Objections – 37 CFR §1.75(a)

The Office has objected to claims 7 and 9, and previously misnumbered claim 36 (current claim 38) as purportedly failing to point out and distinctly claim the subject matter which the applicant regards as his invention or discovery. Claims 7, 9, and 38 have been amended to point out and distinctly claim the subject matter which the Applicant regards as the invention.

The Office has also objected to the misnumbering of previously submitted claims 36-44, in that the claim numbers were not unique and consecutive due to two sets of claims 36 and 37. It is the Applicant's understanding that the misnumbered claims 36-44 have been renumbered claims 38-46 by Examiner's amendment. If this understanding is incorrect, the Applicant hereby renumbers misnumbered claims 36-44 to claims 38-46 by amendment. Furthermore, the Applicant has amended claims 40-46 to provide the appropriate claim dependencies.

Response to Arguments

The Applicant acknowledges the Office's response to the Applicant's arguments filed August 6, 2004. The Applicant addresses the Office's response in the arguments presented below. However, as a preview of the arguments below, the Applicant respectfully asserts that the primary reference, Edgar, fails to disclose or suggest, at the very least, displaying the image. Instead, Edgar's disclosed system operates on scanned images only and is therefore fundamentally different from the technology of the present application. For example, the mere existence of an object within a scanned image does not constitute "specifying a sub-region of the displayed digital image that contains at least a part of the object and another sub-region of the displayed digital image that does not contain the object" or "defining by user input" specific sub-regions of an image. The Office's fundamental misapplication of the Edgar reference to the claims of the present

application should result in the withdrawal of finality and the allowance of the pending claims.

Claim Rejections – 35 U.S.C. §102

Claims 1-3, 5-9, 11-13, 17, 19, 23-24, and 26-46 stand rejected under 35 U.S.C. §102(b) as being purportedly unpatentable over U.S. Patent No. 6,075,590 to Edgar ("Edgar"). The Applicant traverses the rejections.

The Applicant respectively submits that the Edgar reference, while disclosing a method of defect correction, is so fundamentally different from the recited claim that it fails to disclose or suggest <u>any</u> element of claim 1. Generally, Edgar discloses converting coincident blocks from a visible scan image and an infrared scan image into a transform space, subtracting enhanced versions of the transformed infrared blocks from the corresponding transformed visible blocks, and converting the results back into the spatial domain. By analogy, the transformed infrared blocks act as "masks" in the transform space to remove the defect from the transformed visible blocks. As such, the method disclosed in Edgar is quite different from the invention recited in the claims of the present application.

Claim 1 currently recites:

> 1. A method of removing an object from a digital image derived from digital image data, the method comprising:
>   displaying the digital image;
>   specifying a sub-region of the displayed digital image that contains at least a part of the object and another sub-region of the displayed digital image that does not contain the object;
>   identifying the object to be removed by categorizing the digital image data in the sub-region that contains at least a part of the object into an object region and a non-object region; and
>   modifying the digital image data of the object region to more closely resemble the digital image data of the non-object region; and
>   combining noise into the modified digital image data of the object region.

As a primary example of the difference between Edgar and claim 1, the Applicant respectfully asserts that Edgar completely fails to disclose or suggest "displaying a digital image". Although the Office points to scan image 702 as disclosing this claimed

"displaying" element, it is clear that Edgar only discloses "scanning" an image (i.e., a paper document or reflection photographic print) by inputting the image into scan software – there is simply no disclosure of "displaying" the image. In fact, the Applicant has been unable to detect in Edgar any mention of the word "display" or the concept of displaying an image – Edgar only discloses scanning (i.e., input). The absence of any disclosure of displaying the image overcomes any anticipation rejection based on Edgar.

Furthermore, Edgar's failure to disclose or suggest displaying the image ripples throughout the rest of the claim. For example, by failing to disclose or suggest displaying a digital image, Edgar cannot possibly disclose or suggest specifying sub-regions of a displayed image as later recited in claim 1, which explicitly recites "specifying a sub-region of the displayed digital image that contains at least a part of the object and another sub-region of the displayed digital image that does not contain the object". Edgar absolutely fails to disclose or suggest this recited feature.

Nonetheless, the Office asserts that Edgar discloses that regions are specifically "isolated" by virtue of Edgar's statement that "The transform is selected to better isolate the defect scratch 422 from the hair 420". Edgar, col 3, lines 59-60. In response, the Applicant earnestly submits that neither this statement nor any other statement in Edgar discusses specifying "regions" of a displayed image or, more specifically, specifying sub-regions of a displayed image as recited in claim 1. The statement in Edgar explicitly states that a transform is selected, not that a region or sub-region is specified. In fact, Edgar's transforms convert the image blocks from the spatial domain to the frequency domain (or more generally, from image space to transform space – see FIG. 4), where specification of sub-regions of a displayed image is a non sequitur. In the transform space, the location of any object or region of the image is completely lost. That is, the conversion changes the scanned image blocks into "transformed" blocks, which are no longer in spatial correspondence with the scanned image, much less a region of a displayed image. By this conversion alone, it should be clear that Edgar does not disclose or suggest the recited specification of sub-regions of the displayed image.

Furthermore, contrary to the Office's position, the term "isolate" in this statement does not disclose or suggest specifying sub-regions of a displayed image. Instead, Edgar merely discloses selecting a transform that transforms blocks of the two digital images (i.e., visible and infrared) into the frequency domain to correct a defect. Again, no

specification of sub-regions in the displayed image is even suggested. Therefore, Edgar fails to disclose or suggest specifying an object sub-region and a non-object sub-region of a displayed image as recited in claim 1.

However, the Office goes on to argue that Edgar's image block 706 contains both hair and defect and, therefore, discloses the recited specification of an object sub-region and a non-object sub-region. The Applicant strenuously asserts that the mere existence of hair and defect in a scanned image block does not disclose or suggest the specification of object and non-object sub-regions in a displayed image. Edgar is utterly unconcerned with specification of the spatial sub-regions of the scanned image and, in fact, converts the scanned image blocks out of the spatial domain and into the frequency domain to correct the defect. Therefore, Edgar fails to disclose or suggest specifying an object sub-region and a non-object sub-region of a displayed image as recited in claim 1.

As for the recited "identifying" feature of claim 1, it should be clear that Edgar's failure to specify a sub-region of a displayed image that contains an object precludes any disclosure of the claimed categorizing of object and non-object regions within a specified sub-region of the displayed image.

Nevertheless, the Office asserts that a transform is used to "categorize" or 'distinguish'…characteristics…of hair and a scratch" (Edgar, col.3, lines 64-65). Yet, Edgar only discloses detecting differences between hair and a scratch in the transform space. Importantly, the cited language does not disclose categorizing one or the other as an object or a non-object and, more particularly, does not disclose categorizing digital image data in the specified sub-region of the displayed image into object and non-object regions, which is recited in claim 1.

Turning specifically to the recited "identifying" feature, claim 1 recites identifying the object to be removed by categorizing digital image data of one of the sub-regions into an object region and a non-object region, thereby effectively sub-dividing the sub-region. Edgar fails to categorize image data in such a sub-region in any way – there is no sub-dividing of the sub-region into categories. Moreover, in Edgar, the transformed infrared blocks act as masks in the transform space for the transformed visible blocks, thereby allowing the defect to be corrected. But this mask only represents a pattern in a transformed block, not a spatial region of a specified sub-region in a displayed image. For

the foregoing reasons, no categorization of distinct regions of the sub-region containing the object in a displayed image is needed, disclosed or suggested in Edgar.

For completeness, to show that Edgar fails to disclose or suggest any of the recited elements in claim 1, the Applicant respectfully submits that Edgar fails to disclose or suggest the modifying operation because Edgar fails to disclose or suggest the object region and non-object regions of a specified sub-region of a displayed image.

Likewise, although Edgar discloses introducing a blurring effect 1224 into a normalized version of the infra red scan 1208, it fails to disclose or suggest the claimed combining of noise into the modified digital image data of the object region. First, the blurring effect disclosed in Edgar is an averaging operation (not a noise operation) of a 9x9 pixel box around each pixel in the visible light scan (col. 12, lines 57-64) and the normalized version of the infra red scan (col. 12, lines 65-67). Second, Edgar does not teach combining noise, or even averaging effects, into modified digital image data of an object region – images scans 1208 and 1226 have not been modified to more closely resemble a non-object region. In claim 1, the object region is recited as a categorized region of a specified sub-region of the displayed digital image, and the modified digital image data is recited as being modified to more closely resemble the digital image data of the non-object region. These recited features are not disclosed or suggested by Edgar.

As for the combining feature, the Office argues that the infrared transform block 742 constitutes "noise". In response, the Applicant argues that the infrared transform block 742 is a carefully processed mask in the transform space, not noise (which connotes a level of randomness and irrelevance). One of ordinary skill in the art would not characterize the infrared transform block 742 as noise. It would be clear to one of ordinary skill in the art of image processing that a carefully processed and transformed infrared image block mask does not constitute "noise". These recited features are not disclosed or suggested by Edgar.

For at least the foregoing reasons, Edgar fails to disclose or suggest the recited features of claim 1. Therefore, Edgar fails to anticipate or make obvious the invention of claim 1, and the Applicant requests allowance thereof.

Claims 2-3, 5-9, 11-13, 17, 19, 23-24, and 26-28 depend from claim 1, which is believed allowable. As such, claims 2-3, 5-9, 11-13, 17, 19, 23-24, and 26-28 are believed

allowable for at least the same reasons as claim 1, and the Applicant earnestly requests that claims 2-3, 5-9, 11-13, 17, 19, 23-24, and 26-28 be allowed.

The Applicant further points out that claim 28 recites displaying the image to a user. The Office responds that Edgar discloses displaying image 702 "using figure 1 to a user via a computer 122 and (sic) arrow that points to images 132-142". The Applicant respectfully disputes this interpretation of Edgar and asserts once again that Edgar merely discloses using the computer for "scanning". There is absolutely no discussion of displaying the image and no display device is even shown or discussed in Edgar, further emphasizing the differences between Edgar and the claimed invention.

The Applicant also submits that claim 28 recites "receiving input from the user specifying a location of a virtual frame within the displayed digital image". The Office states that the "virtual frame and the displayed digital image are one of (sic) the same". This is an unreasonable interpretation of the recited feature, particularly because the claim recites specifying the location of the virtual frame _within_ the displayed digital image. As such, the virtual frame, which defines the sub-regions of the displayed digital image, and the displayed digital image are claimed as distinct entities. The Applicant further emphasizes that scan image 702 does not show a virtual frame, as proposed by the Office in the rejection of claims 36 and 44. Not only is scan image 702 not disclosed or suggested as "displayed" in Edgar, but (a) there is no frame; (b) there is no frame that defines sub-regions; and (c) no input from a user specifies the location of a virtual frame. Edgar simply fails to disclose or suggest such a virtual frame or the other recited features of claim 28.

Claim 29 is similar to claim 1, which is believed allowable. As such, claim 29 is believed allowable for at least the same reasons as claim 1, and the Applicant earnestly requests that claim 29 be allowed.

Claim 30 is similar to claim 28 and depends from claim 29, both of which are believed allowable. As such, claim 30 is believed allowable for at least the same reasons as claims 28 and 29, and the Applicant earnestly requests that claim 30 be allowed.

Claim 35 is similar to claim 28, which is believed allowable. As such, claim 35 is believed allowable for at least the same reasons as claim 28, and the Applicant earnestly requests that claim 35 be allowed.

Claim 43 is similar to claim 28, which is believed allowable, and depends from claim 39, which is believed allowable as indicated below. As such, claim 43 is believed allowable for at least the same reasons as claims 28 and 39, and the Applicant earnestly requests that claim 43 be allowed.

The Office has rejected claim 31 using the same arguments as used in the rejections of claims 1 and 28. To the extent that claim 31 shares features with claims 1 and 28, claim 31 is believed allowable for at least the same reasons as claims 1 and 28, and the Applicant earnestly requests that claim 31 be allowed.

However, claim 31 also recites features not shared with claims 1 and 28 and the Office has apparently failed to consider these features in its rejection. For example, the Office has failed to provide support for its rejection of a claim reciting at least the following features:

- defining <u>by user input</u> a defect sub-region of an image;
- defining <u>by user input</u> a non-defect sub-region of the image;
- defining <u>an array of interest</u> containing pixels in the two sub-regions of the image; and
- classifying one or more pixels <u>along</u> the array of interest in the defect sub-region as defect pixels, based on image data of pixels in the array of interest within the non-defect sub-region.

None of these features are disclosed or suggested in Edgar, notwithstanding the Office's unsupported equating of an "array of interest" with an "<u>array of hair</u>" in regard to claims 33, 34, 41, and 42. Edgar makes no reference to or suggestion of an "array of hair" and makes no disclosure or suggestion to equate hair with the recited "array of interest". Furthermore, the array of interest is recited as containing pixels in the two sub-regions of the image, which is completely absent from Edgar. Accordingly, claim 31 is believed allowable, and allowance is therefore requested.

Claim 32 depends from claim 31, which is believed allowable. As such, claim 32 is believed allowable for at least the same reasons as claim 31, and the Applicant earnestly requests that claim 32 be allowed.

Claim 39 is similar to claim 31, which is believed allowable. As such, claim 39 is believe allowable for at least the same reasons as claim 31, and the Applicant earnestly requests that claim 39 be allowed.

Claim 40 depends from claim 39, which is believed allowable. As such, claim 40 is believed allowable for at least the same reasons as claim 39, and the Applicant earnestly requests that claim 40 be allowed.

Claims 33-34 and 36 depend from claim 31, which is believed allowable. As such, claims 33-34 and 36 are believed allowable for at least the same reasons as claim 31, and the Applicant earnestly requests that claims 33-34 and 36 be allowed.

Claims 41-42 and 44 depend from claim 39, which is believed allowable. As such, claims 41-42 and 44 are believed allowable for at least the same reasons as claim 39, and the Applicant earnestly requests that claims 41-42 and 44 be allowed.

The Office stated that claims 37-38 and 45-46 were also rejected under 35 USC 102(b) as being purported anticipated by Edgar, but no detailed rejection was given in this section of the Office Action. Instead, detailed rejections of claims 37-38 and 45-46 are provided in the Rejections – 35 USC §103(a) section of the Office Action. Therefore, the Applicant responds to the rejections of claims 37-38 and 45-46 below.

For the foregoing reasons, the Applicant requests that claims 1-3, 5-9, 11-13, 17, 19, 23-24, 26-36 and 39-44 be allowed.

Claim Rejections – 35 U.S.C. §103

Claims 4, 10, 18, and 25 stand rejected under 35 U.S.C. §103(a) as being purportedly unpatentable over U.S. Patent No. 6,075,590 to Edgar ("Edgar") in further view of U.S. Patent No. 5,425,134 to Ishida ("Ishida"). The Applicant traverses the rejections.

Claims 4, 10, 18, and 25 depend from claim 1, which is believed allowable. As such, claims 4, 10, 18, and 25 are believed allowable for at least the same reasons as claim 1, and the Applicant earnestly requests that claims 4, 10, 18, and 25 be allowed.

Claims 14-16 and 20-22 stand rejected under 35 U.S.C. §103(a) as being purportedly unpatentable over U.S. Patent No. 6,075,590 to Edgar ("Edgar") in further view of U.S. Patent No. 5,982,946 to Murakami ("Murakami"). The Applicant traverses the rejections.

Claims 14-16 and 20-22 depend from claim 1, which is believed allowable. As such, claims 14-16 and 20-22 are believed allowable for at least the same reasons as claim 1, and the Applicant earnestly requests that claims 14-16 and 20-22 be allowed.

Claims 37, 38, 45 and 46 stand rejected under 35 U.S.C. §103(a) as being purportedly unpatentable over U.S. Patent No. 6,075,590 to Edgar ("Edgar") in further view of U.S. Patent No. 6,075,590 to Lawton et al. ("Lawton"). The Applicant traverses the rejections.

Claims 37-38 depend from claim 31, which is believed allowable. As such, claims 37-38 are believed allowable for at least the same reasons as claim 31, and the Applicant earnestly requests that claims 37-38 be allowed.

Claims 45-46 depend from claim 39, which is believed allowable. As such, claims 45-46 are believed allowable for at least the same reasons as claim 39, and the Applicant earnestly requests that claims 45-46 be allowed.

For the foregoing reasons, the Applicant requests that claims 4, 10, 14-16, 18, 20-22, 25, 37-38, and 45-46 be allowed.

Conclusion

As a result of the renumbering, Applicant hereby submits a payment of $50 as the small entity fee for 2 additional total claims over the number of previously paid for claims.

Based on the amendments and remarks herein, the Applicant respectfully requests prompt issuance of a notice of allowance for claims 1- 46 in this matter.

Respectfully Submitted,

Dated: ___3-24-05___   By: _____

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